Batch variation in porcine circovirus type 2 viral loads in serum pools and oral fluid

Nielsen, Gitte Blach; Nielsen, Jens Peter; Haugegaard, John ; Houe, Hans

Batch variation in Porcine circovirus type 2 viral loads in serum pools and oral fluid

Gitte Blach Nielsen[a,b], Jens Peter Nielsen[a], John Haugegaard[b], Hans Houe[a]
[a]Department of Large Animal Sciences, University of Copenhagen, Grønnegårdsvej 2+8, 1870 Frederiksberg C, Denmark, [b]MSD Animal Health Nordic, Havneholmen 25, 1561 Copenhagen V, Denmark

INTRODUCTION

Porcine circovirus type 2 (PCV2) herd diagnosis is often based on qPCR of serum pools and/or oral fluid collected on one day from different age groups belonging to different weekly production batches. Results are then interpreted 'longitudinally', assuming that herd infection dynamics only differ according to age group and that findings will represent present and future batches. The objective of this study was to evaluate this 'longitudinal' interpretation by assessing variation in PCV2 viral loads, in serum pools and oral fluid, between production batches.

MATERIAL AND METHODS

In 14 batches of finishing pigs from one herd, serum pools from 4 pigs and oral fluid representing around 30 pigs in the same 2-5 pens per batch were collected at 3-week intervals, totally 4 times. PCV2 was analyzed by qPCR and mean viral load of the four samplings represented the overall PCV2 load at pen level. Batch variation of mean viral loads in serum pools and oral fluid, respectively, was assessed by analyses of variance (ANOVA). Pairwise comparisons were done by Tukey´s test. Statistical significance level was set at 0.05.

RESULTS

Figures 1 and 2 display the mean PCV2 viral loads in serum pools and oral fluid, respectively, for each pen in individual batches . Range of batch means (SD) for serum pools and oral fluid were 4.49-6.07 (0.03-1.31) and 6.74-7.46 (0.10-0.39) log(10), respectively, PCV2 copies per ml sample. The analyses of variance indicated a significant effect of batch for both serum pools (p=0.003) and oral fluid (p=0.03), but subsequent pairwise comparisons revealed only significant differences between some batches.

DISCUSSION AND CONCLUSION

Due to the high between-batch variation for PCV2 viral loads in serum pools, one-day sampling of several age groups using serum pools cannot be considered a valid proxy for 'longitudinal' interpretation. For this purpose, oral fluid viral loads were more consistent with less within- and between-batch variation. Due to the larger sample size, highly viremic pigs are much more likely to be detected when oral fluid rather than serum is collected, which should be borne in mind when interpreting results.

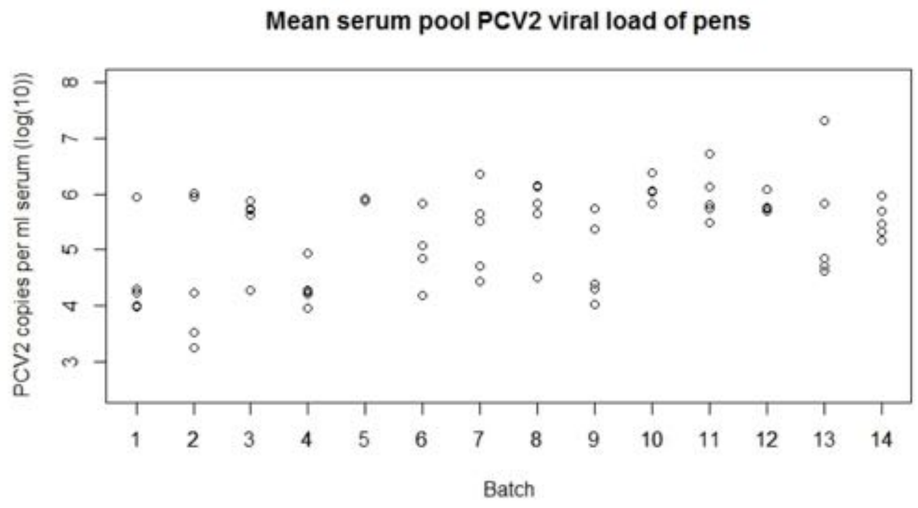

FIGURE 1

Pen PCV2 viral load in serum pools displayed per batch. Mean viral load of the four sampling time points.

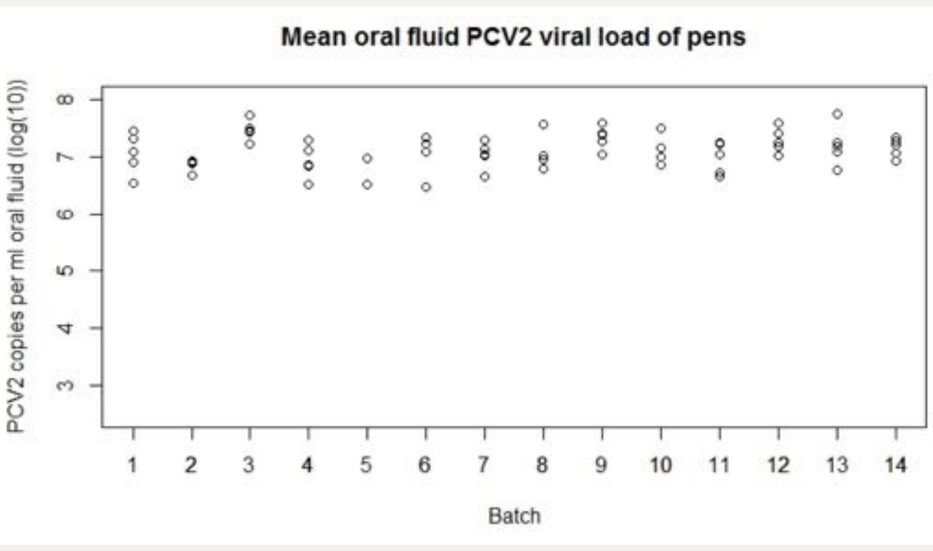

FIGURE 2

Pen PCV2 viral load in oral fluid displayed per batch. Mean viral load of the four sampling time points.